TRR404 Mercator Fellow / IEEE Distinguished Lecture

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"Scaling in Size, Stuck in Voltage: A CMOS Retrospective and Outlook"

13 February 2026 | 2:30 pm

Toepler Bau Room TOE/315

Online: https://memristec.de/20260213_Lecture

Hosts:
Dr. Jens Trommer (NaMLab gGmbH)
Prof. Regina Dittmann (FZ Jülich)
Prof. Dr. Ronald Tetzlaff (TU Dresden)

Abstract

Over 100 years since its invention we celebrate the humble Metal-Oxide-Semiconductor Field Effect Transistor (MOSFET). Scaling of this transistor according to Moore's law has had a transformative effect on society, giving us products from computers, laptops to smart phones, that have made life virtually unrecognisable from 50 years ago. This talk will focus on the physics of operation of the MOSFET leading towards present day challenge of sub-threshold operation that has never materialised despite decades of effort.

Bio

Maria Merlyne De Souza received her BSc (Physics and Maths from Uni. Mumbai), B.E (Electronics and Communications Engineering, IISc Bangalore) and PhD from the University of Cambridge in 1994. She became Professor of Electronics and Materials at the Emerging Technologies Research Centre, De Montfort University in 2003 and Professor of Microelectronics at the University of Sheffield in 2007. She has been a technical and executive committee member of IEEE- International Electron Devices Meeting between 2012-2017 and a technical committee member of the IEEE-International Reliability Physics Symposium 2003-2013. She is current VP of Interdisciplinary Technical committees of the IEEE-EDS. She has published ~120 journal papers and 190 conferences.